SOIL INVESTIGATION
for
CREEK IMPROVEMENTS
NEAR THE NE CORNER OF CAPITOL
EXPRESSWAY AND QUIMBY ROAD

SAN JOSE, CALIFORNIA

UNITED SOIL ENGINEERING
CONSULTING ENGINEERS and GEOLOGISTS

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REPORT

to

SANTA CLARA VALLEY
WATER DISTRICT
SAN JOSE, CALIFORNIA

on

SOIL INVESTIGATION for CREEK IMPROVEMENTS NEAR THE NE CORNER OF CAPITOL EXPRESSWAY AND QUIMBY ROAD

SAN JOSE, CALIFORNIA

by

UNITED SOIL ENGINEERING, INC.

3476 EDWARD AVENUE

SANTA CLARA, CALIFORNIA

JULY 1978

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UNITED SOIL ENGINEERING, INC.
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File No. 8-175-S1
July 24, 1978

Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, California 95118

Attention: Mr. Bruce McClish

Subject: Creek Improvements
Near the NE corner of Capitol Expressway
and Quimby Road
San Jose, California
SOIL INVESTIGATION

Gentlemen:

We are pleased to transmit herewith the results of the soil investigation performed for the proposed Creek Improvements located near the NE corner of Capitol Expressway and Quimby Road in San Jose, California.

This report shows our findings in the subsurface investigation, laboratory analyses, and our conclusions based on these findings.

Very truly yours,

UNITED SOIL ENGINEERING, INC.

Nai Kwong Leung

Nai Kwong Leung
Project Engineer

Max M. Gahrahmat

Max M. Gahrahmat, P.E.

NKL:MMG:acy

Copies: 4 to Santa Clara Valley Water District

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SOIL INVESTIGATION

Introduction

The purpose of the soil investigation performed by us for the proposed Creek Improvements in San Jose, California, was to determine the nature of the surface and subsurface soil conditions at the project site through field and laboratory testing of the soil materials found there. This report presents an explanation of how we conducted that investigation, the results of the testing programs and our conclusions based upon their results.

Location and Description of Site

The project site is an essentially flat levee road of Thompson Creek located near the NE corner of Capitol Expressway and Quimby Road in San Jose, California. Figure 1 is the Site Plan.

Field Investigation

After careful consideration of the nature of the proposed development, review of available data on the area, and discussion with the client, a field investigation was conducted at the project site by the Project Geologist under the direction of the Soil Engineer. It included a surface site reconnaissance to detect any unusual surface features, and the drilling of one exploratory test boring to determine the subsurface soil characteristics. The boring, which was drilled on July 13, 1978, at the approximate location shown on Figure 1, penetrated 30 feet (9 m.) below the existing ground surface. The boring was advanced by a truck-mounted drill rig using power driven, 6-inch (15 cm.) diameter continuous flight augers. The soils encountered were logged continuously in the field during the drilling operations. Relatively undisturbed soil samples were obtained by hydraulically pressing a 2½-inch (6.4 cm.) O.D. split-tube sampler into the ground at various depths. In addition, a disturbed bulk sample of the near-surface soil was collected for laboratory analyses. Figure 2 is the Log of the Test Boring and shows the depths at which the relatively undisturbed soil samples were obtained.

Laboratory Investigation

A laboratory testing program was performed to determine the physical and engineering properties of the soils underlying the site. Moisture content and dry density tests were performed on all the relatively undisturbed soil samples in order to determine their consistencies, and the moisture variation throughout the explored soil profile. The strength parameters of the foundation soils were determined from a direct shear test performed on a selected relatively undisturbed soil sample. The sample subjected to the direct shear test was allowed access to water for at least 24 hours prior to testing, and then sheared in an undrained state at loads of 1, 2, 3 and 4 kips (.5, .9, 1.4 and 1.8 metric tons). One laboratory compaction test was performed on the near-surface materials utilizing the ASTM test procedure D1557-70. Atterberg Limits tests were also performed on the near-surface soil to assist in the classification of these soils, and to obtain an evaluation of their expansion and shrinkage potential. The results of the laboratory testing program are presented in Table I, and in Figures 3 and 4 of Appendix "A".

Soil Conditions

The surficial soil at the project site consists of a dark brown silty clay, extending to a depth of 7½ feet (2.3 m.). It is damp and firm to stiff. From this point to a depth of 12 feet (3.6 m.) light brown and gray silty clays with minor gravels were encountered. These materials were soft to firm and very moist. Gravelly clays with angular and rounded pebbles up to ½-inch diameter were found between depths of 12 to 17 feet (3.6 to 5.1 m.). These soils were stiff, dense and very moist to wet. Dark brown silty clay with minor gravels were found between 17 to 21½ feet (5.1 to 6.5 m.) and 27 to 31 feet (8.1 to 9.3 m.). They were stiff, dense and very moist. Brown, gravelly, sandy silts with rounded and angular gravels up to 3/4-inch diameter were encountered between 21½ to 27 feet (6.5 to 8.1 m.). These materials were very stiff, very dense and very moist to wet. Mottling was due to caliche and limonite staining. Free standing ground water was found at 13 feet (3.9 m.) below the existing ground surface. The water depth in the Boring was remeasured after drilling and had risen from approximately 13 feet (3.9 m.) to approximately 10 feet (3 m.).

CONCLUSIONS

1. The native soils, with the exception of the organically contaminated surface soil, are suitable for engineered fill.

2. The native surface soil at the project site has been found to have a low expansion potential when subjected to fluctuations in moisture.

3. On the basis of the engineering reconnaissance and exploratory borings, it is our opinion that trenches to 5 feet (1.5 m.) deep below the existing ground surface will not need shoring. However, below 5 feet (1.5 m.) deep, shoring will be required. Cuts to approximately 15 feet (4.6 m.) deep should be possible with conventional heavy duty equipment.

LIMITATIONS AND UNIFORMITY OF CONDITIONS

The findings of this report are valid as of the present time. However, the passing of time will change the conditions of the existing property due to natural processes, works of man, from legislation or the broadening of knowledge. Therefore, this report is subject to review and should not be relied upon after a period of three years.

APPENDIX "A"

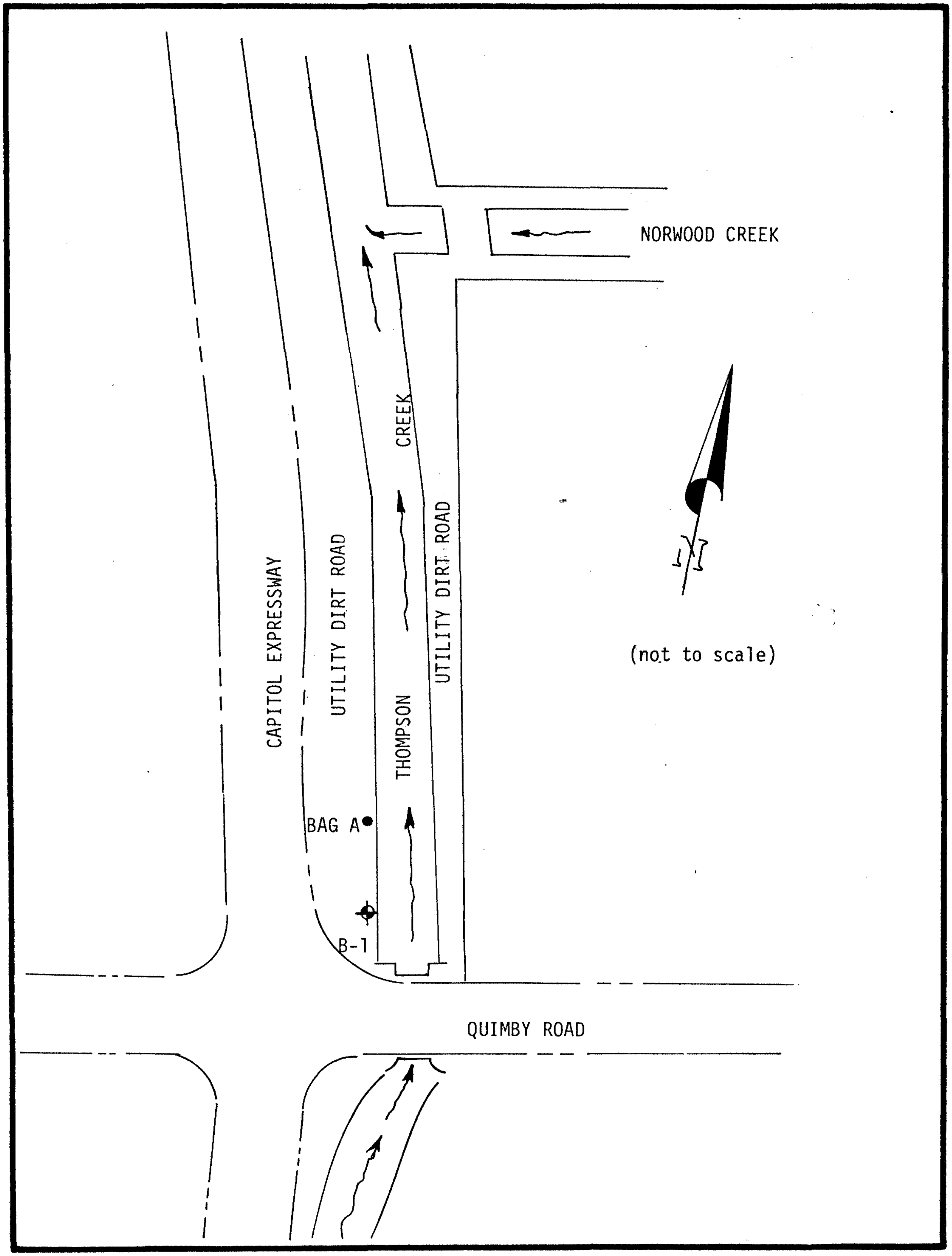
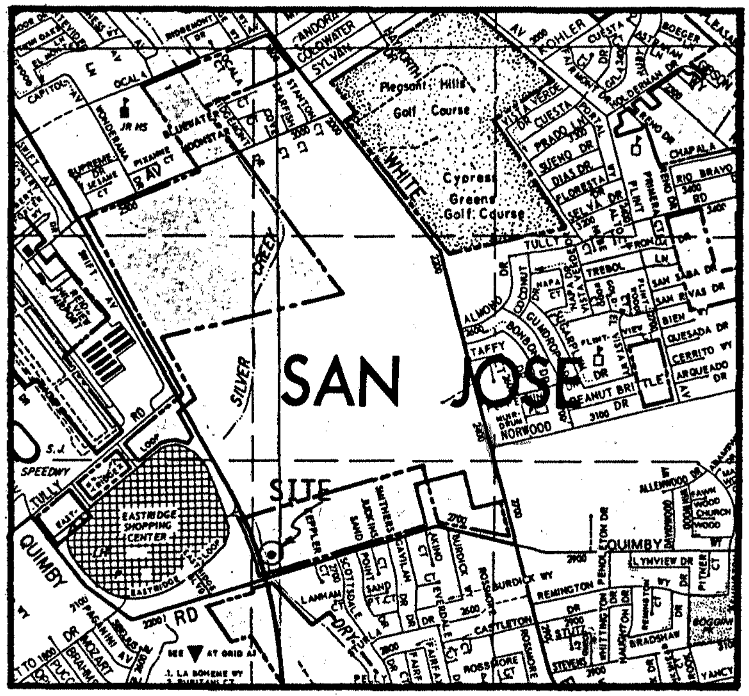


Figure 1 - Site Plan

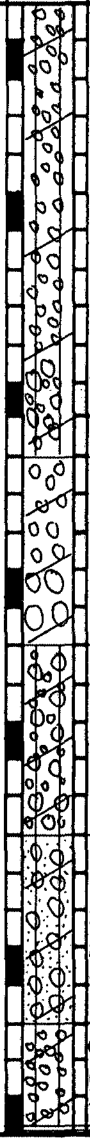


VICINITY MAP

Figure 1a - Vicinity Map

Logged By: A.R. Date Drilled: 7-13-78	EXPLORATORY BORING LOG	Hole No. B-1

Job No. 8-175-S1

Dry Density p.c.f.	Moisture Content %	Penet. Resist. Blows/ft.	Unconf. Comp. Strength, k.s.f.	Direct Shear Test		Sample Number	Depth in Feet	Boring Log	DESCRIPTION
				"C" k.s.f.	"φ" Degree				
99.2	13.4			1.1	16.5	1-1			Dark brown silty CLAY, dry, stiff* firm to stiff, damp, minor organics (2%)
97.1	23.3					1-2	5		some mottling with caliche and limonite staining firm, damp changing color to light brown and gray
91.4	30.2					1-3	10		▼ Soft to firm, very moist with percolation holes, minor gravel **
120.9	14.3					1-4	15		▽ up to ½" diameter rounded and angular pebbles stiff and dense, very moist to wet decreasing gravel
104.8	21.3					1-5	20		dark brown silty CLAY with minor gravel stiff and dense, moist
118.8	14.6					1-6	25		brown gravelly sandy SILT with some CLAY- verv dense, very moist*** very stiff and dense, very moist to wet
118.6	16.5					1-7	30		decreasing gravel size to pea-gravel, brown silty CLAY w/gravel firm to stiff, very moist CL

Remarks:

* minor pea-gravel CL
** increasing gravelly CLAY CL
*** up to 3/4" diameter rounded and angular pebbles CL

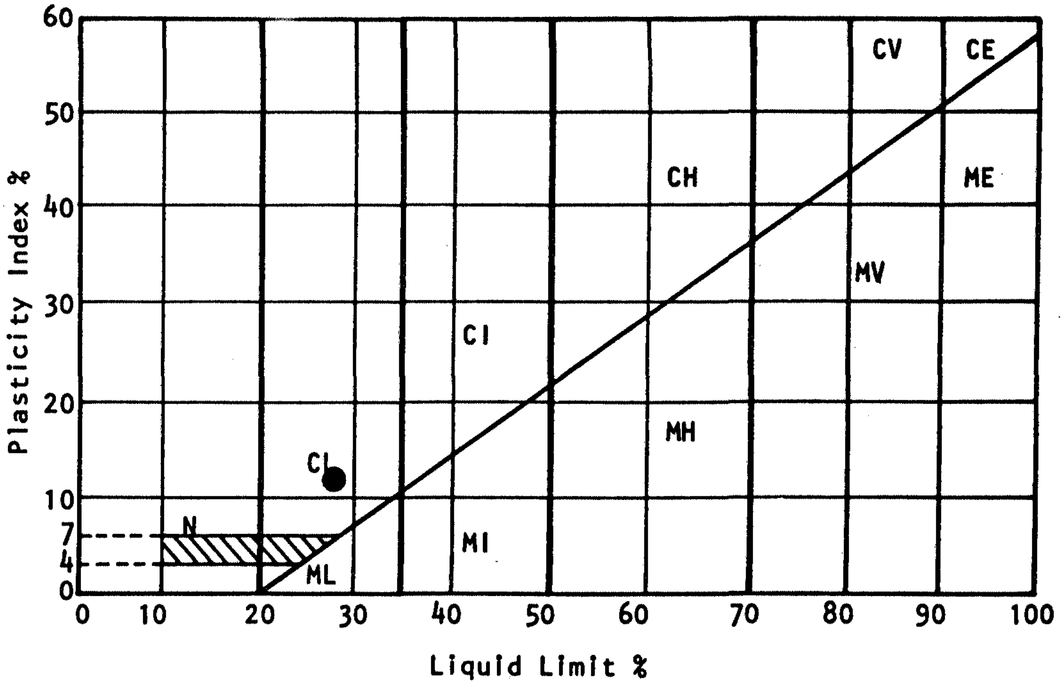
Figure 2 - Log of Test Boring

TABLE I

SUMMARY OF MOISTURE, DENSITY, UNCONFINED COMPRESSION AND DIRECT SHEAR TESTING

Sample No.	Depth Ft.	In-Place Conditions		Unconfined Compressive Strength k.s.f.	Direct Shear Testing	
		Moisture Content % Dry Wt.	Dry Density p.c.f.		Angle of Internal Friction Degrees	Unit Cohesion p.s.f.
1-1	2'	13.4	99.2		16.5	1069
1-2	6'	23.3	97.1			
1-3	11'	30.2	91.4			
1-4	16'	14.3	120.9			
1-5	20'	21.3	104.8			
1-6	26'	14.6	118.8			
1-7	20'	16.5	118.6			

PLASTICITY CHART

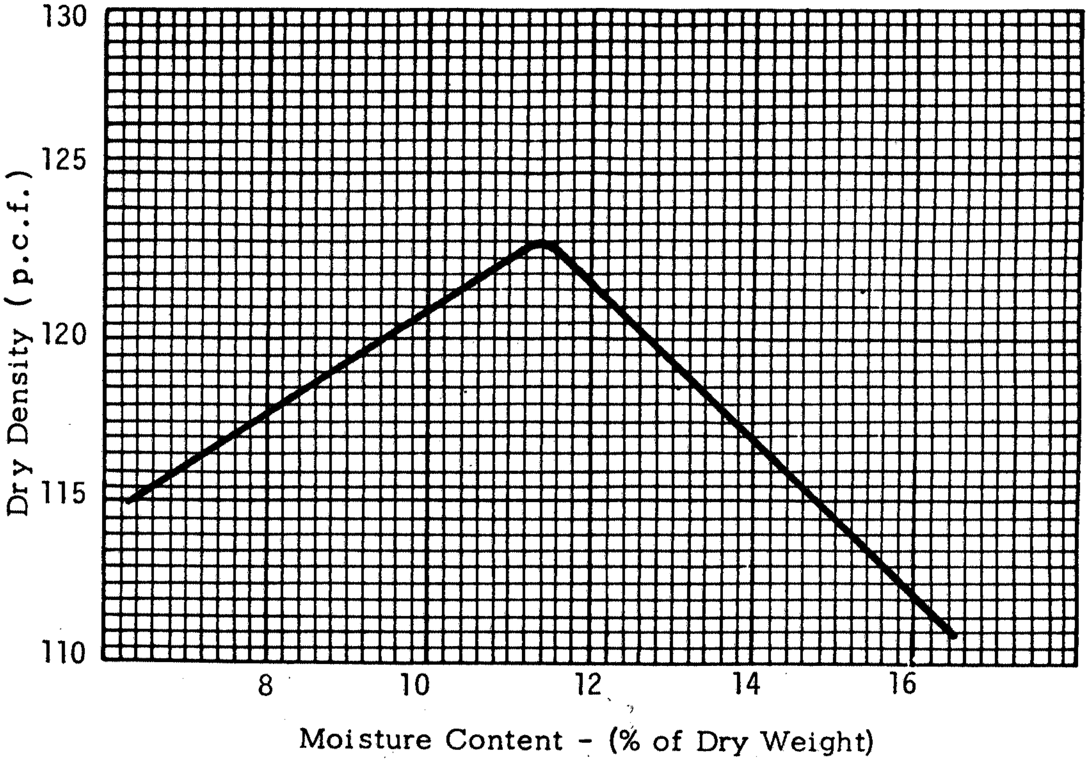


PLASTICITY DATA

Key Symbol	Hole No.	Depth Ft.	Liquid Limit %	Plasticity Index %	Unified Soil Classification Symbol*
●	A	0-1	27.9	10.9	CL

* Soil type classification based on British suggested revisions to Unified Soils Classification System

Figure 3 - Plasticity Index



SAMPLE: Bag A

DESCRIPTION: Brown silty CLAY

LABORATORY TEST PROCEDURE: ASTM D1557-70

MAXIMUM DRY DENSITY: 123.0 p.c.f.

OPTIMUM MOISTURE CONTENT: 11.6%

Figure 4 - Compaction Curve "A"